

WHAT IS CLAIMED IS:

1. A light diffuser comprising a thermoplastic layer containing thermoplastic polymeric material and microvoids having a substantially circular cross-section in a plane perpendicular to the direction of light travel and having a diffuse light transmission efficiency of at least 65%.
2. The light diffuser of Claim 1 wherein the difference in refractive index between the thermoplastic polymeric material and the microvoids is greater than 0.2.
3. The light diffuser of Claim 1 wherein said microvoids are formed by organic microspheres.
4. The light diffuser of Claim 1 wherein said microvoids are substantially free of scattering inorganic particles.
5. The light diffuser of Claim 1 wherein the microvoids contain cross-linked polymer beads.
6. The light diffuser of Claim 1 wherein the microvoids contain a gas.
7. The diffuser of Claim 1 where thickness uniformity across the light diffuser is less than 0.10 micrometers.
8. The light diffuser of Claim 1 wherein the elastic modulus of the light diffuser is greater than 500 MPa .
9. The light diffuser of Claim 1 wherein the impact resistance of the light diffuser is greater than 0.6 GPa.

10. The light diffuser of Claim 1 wherein said light transmission is greater than 80%.

11. The light diffuser of Claim 1 wherein said light transmission is greater than 87%.

12. The light diffuser of Claim 1 wherein said microvoids have a major axis diameter to minor axis diameter ratio of less than 2.0.

13. The light diffuser of Claim 1 wherein said microvoids have a major axis diameter to minor axis diameter ratio of between 1.6 and 1.0.

14. The light diffuser of Claim 1 wherein said thermoplastic layer contains greater than 4 index of refraction changes greater than 0.20 parallel to the direction of light travel.

15. The light diffuser of Claim 1 wherein said microvoids have a average volume of between 8 and 42 cubic micrometers over an area of 1 cm².

16. The light diffuser of Claim 1 wherein said microvoids have a average volume of between 12 and 18 cubic micrometers over an area of 1 cm².

17. The light diffuser of Claim 1 wherein the said light diffuser has a thickness less than 250 micrometers.

18. The light diffuser of Claim 1 wherein the said light diffuser has a thickness between 12.5 and 50 micrometers.

19. The light diffuser of Claim 1 wherein said thermoplastic layer comprises polyolefin polymer.

20. The light diffuser of Claim 1 wherein said thermoplastic layer comprises polyester polymer.

21. The light diffuser of Claim 5 wherein said cross linked polymer beads have a mean particle size less than 2.0 micrometers.

22. The light diffuser of Claim 5 wherein said cross linked polymer beads have a mean particle size between 0.30 and 1.7 micrometers.

23. A back lighted imaging media comprising a light source and a thermoplastic layer containing a thermoplastic polymer material and microvoids having a substantially circular cross-section in a plane perpendicular to the direction of light travel and having a diffuse light transmission efficiency of at least 65%.

24. An liquid crystal device comprising a light source and a thermoplastic layer containing microvoids having a substantially circular cross-section in a plane perpendicular to the direction of light travel and having a diffuse light transmission efficiency of at least 65% wherein said thermoplastic layer is located between the light source and a polarizing film.

25. A liquid crystal device component comprising a light source and a thermoplastic layer containing microvoids having a substantially circular cross-section in a plane perpendicular to the direction of light travel and having a diffuse light transmission efficiency of at least 65%.